

A NEW GENERIC NAME FOR TATE'S (1933)
MICROTARSUS GROUP OF SOUTH AMERICAN
MOUSE OPOSSUMS
(MARSUPIALIA: DIDELPHIDAE)

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Abstract. — Until recently, all mouse opossums were considered as belonging to the genus *Marmosa*, as revised by Tate (1933). Today, however, we recognize that *Marmosa* (s.l.) contains several distinctive species groups whose relationships are best expressed by dividing this complex into five genera as follows: *Marmosa* (s.s.), *Marmosops*, *Micoureus*, *Thylamys*, and a complex of species for which we propose a new name *Gracilinanus* because no genus-group name is available.

Systematists have differed in their interpretation of the generic and subgeneric taxonomy of the smaller mouse-sized marsupials of the family Didelphidae. Thomas (1888) grouped the known taxa of mouse opossums under the subgenus *Micoureus* in the genus *Didelphys*. Matschie (1916) distributed these taxa among five subgenera of *Didelphis*: *Marmosa*, *Grymaeomys*, *Marmosops*, *Thylamys*, and *Caluromys*. Cabrera (1919) grouped mouse opossums into two subgenera (*Marmosa* and *Thylamys*) under the genus *Marmosa*. Tate's (1933) revision was the most comprehensive. Tate (1933:22) believed that the genus *Marmosa* was a "good, natural genus of didelphids" that included all Neotropical mouse opossums. Although Tate acknowledged natural subunits in his concept of *Marmosa*, he did not recognize subgenera and, instead, used the following names to indicate five informal groups: *cinerea*, *murina*, *noctivaga*, *microtarsus*, and *elegans*. He also expressed the opinion (p. 22) that "there is always the chance that subgenera may be later converted into full genera, and thus, in the case of *Marmosa* the undoubted unity of the genus be obscured."

Over the ensuing half-century, however, new information has made the division of

Marmosa (sensu Tate 1933) into several genera a desirable and necessary step to better reflect relationships and natural assemblages. Gilmore (1941) again divided *Marmosa* into the subgenera *Marmosa* and *Thylamys* but did not list species. Cabrera (1958) used *Marmosa* and *Thylamys* as subgenera as he had earlier (Cabrera 1919) and followed the species associations of Tate (1933) except that he divided Tate's *microtarsus* group, assigning the *microtarsus* section to *Thylamys* and the *lepida* section to *Marmosa*. Marshall (1981) listed the names *Marmosa* ("murine opossums"), *Micoureus* ("large murine opossums"), and *Thylamys* ("small murine opossums"), as genera among other didelphids and attributed this arrangement to a manuscript by Reig et al. subsequently published in 1985. Reig et al. (1985) assigned Tate's (1933) *murina* and *noctivaga* groups to the genus *Marmosa* along with the more recently described taxa *M. andersoni*, *M. cracens* (incorrectly spelled *crascens*), and *M. xerophila*. They allocated Tate's (1933) *cinerea* group to *Micoureus*. They also assigned the 14 species listed by Kirsch & Calaby (1977) along with *Marmosa lepida*, *M. emiliae*, and *M. contrerasi*, to *Thylamys*. Creighton (1984) also recognized five groups in his revision of the genus

Marmosa (s.l.). He placed four of these (*cinerea*, *murina*, *noctivaga*, and *microtarsus*) in the subgenus *Marmosa* and the fifth (*elegans*) in the subgenus *Thylamys*.

Despite Creighton's (1984) conservative treatment of *Marmosa* (s.l.), each of the groups he recognized corresponds to a genus in the sense used by Kirsh & Calaby (1977) and Reig et al. (1985, 1987). Creighton's *elegans*-group equals *Thylamys* and corresponds closely to Tate's *elegans* group, but is more restrictive than construed by Cabrera (1958), Kirsch & Calaby (1977), and Reig et al. (1985, 1987). We recognize *Thylamys* Gray, 1843 as a genus that includes the species *T. elegans* (genotype), *T. macrura* (Olfers, 1818:205; *Didelphis grisea* Desmarest, 1827, is a junior synonym), *T. pallidior*, *T. pusillus*, and *T. velutinus*. Creighton's *cinerea*-group corresponds to that of Tate (1933) as used by Reig et al. (1985, 1987) under the generic name *Micoureus* Lesson, 1842 (*Micoures* Reig et al. 1987, is an incorrect subsequent spelling), to which we assign the species *Micoureus cinereus* (genotype), *M. constantiae*, *M. regina*, and *M. alstoni*. Creighton's *murina*-group is similar to Tate's (1933) group by the same name except that Creighton also included *M. lepida*. The earliest available name for Creighton's *murina*-group is *Marmosa* Gray, 1821, which we use here as a genus in a narrower sense than treated by Reig et al. (1985, 1987). As we understand it, *Marmosa* (s.s.) includes *Marmosa andersoni*, *M. canescens*, *M. lepida*, *M. mexicana*, *M. murina* (genotype), *M. robinsoni*, *M. rubra*, *M. tyleriana*, and *M. xerophila*. Reig et al. (1985, 1987) combined Tate's *noctivaga* and *murina* groups under *Marmosa*. However, Creighton (1984) showed that Tate's (1933) *noctivaga* group, with the addition of *M. parvidens* (which Tate had included in his *microtarsus* group), and the more recently described taxa *M. cracens* and *M. handleyi*, is a natural unit of closely related species for which the name *Marmosops* Matschie, 1916, is available. *Marmo-*

sops includes the species *M. cracens*, *M. dorothea*, *M. fuscatus*, *M. handleyi*, *M. impavidus*, *M. incanus* (genotype), *M. invictus*, *M. noctivagus*, and *M. parvidens*. This is similar to Reig et al.'s (1987:7) composition of *Marmosops*, which they ranked as a subgenus of *Marmosa*.

Creighton's (1984) fifth taxon, the *microtarsus*-group, is nearly identical to Tate's *microtarsus* section with the addition of the more recently described *M. agricolai*. However, Kirsch & Calaby (1977) and Reig et al. (1985, 1987) followed Cabrera (1958) in combining Tate's (1933) *elegans* group and *microtarsus* section under *Thylamys*, along with some other taxa that Creighton (1984) showed belong elsewhere. Creighton included nine species in his *microtarsus*-group, although here we recognize only six. No genus-group name is available for this species complex for which we propose the name:

Gracilinanus, new genus

Type species.—*Didelphys microtarsus* Wagner, 1842:359; type locality "Ypanema" (=Bacatava), São Paulo, Brazil.

Etymology.—From the Latin *gracilis* (thin, slender) and Greek *nanos* (dwarf) combined to reflect the small size and slender or gracile form of the species included in this genus.

Distribution.—*Gracilinanus* contains six living species whose composite geographic range is below 3000 m in the tropical and subtropical zone east of the Andean Cordillera of South America.

Diagnosis and description.—A genus of small mouse opossums (head and body, 85.0–130.0 mm; tail, 90.0–150.0 mm). The ratio of tail length to head-and-body length is always greater than 1.3 and usually less than 1.5. Dorsal pelage ranges from bright reddish brown to dull brownish gray. The tail has small (more than 40 per cm) rounded to square scales, arranged in annular rows. Triplet interscalar hairs are subequal in length with the middle hair about three scale rows long. The diameter of the middle hair

is about twice that of the lateral hairs, but not as stout and petiolate as in *Marmosops*. The tail is weakly bicolored in some species (*G. agilis* and *G. marica*) and unicolored fuscous in others (*G. aceramarcae*, *G. dryas*, and *G. microtarsus*). Claws on the manus do not extend beyond terminal digital pads. The central palmar surfaces lack the granular appearance of those of *Thylamys* and *Monodelphis*. All palmar and plantar tubercles (description by Creighton 1984) are present and separated by at least a double row of granules. Sparse granules are present on the central plantar surface. Granules on the proximal ventral surfaces of the digits are fused into transverse bars. The skull lacks postorbital processes; however, the supraorbital margin of the frontals may be beaded in larger individuals of some species. The lambdoidal crest is weakly developed or absent except in the largest individuals. The hard palate is highly fenestrated, usually with three pairs of medial fenestrae (medial, posteromedial, and mesolateral—described in Creighton 1984). The posterolateral fenestrae are moderate in size, usually about a third to half the breadth of the last upper molar in length. The nasals are moderately expanded laterally at the maxillo-frontal suture. The auditory bullae are relatively large compared with those of *Marmosa*, *Micoureus*, and *Marmosops*, but proportionately smaller than in *Thylamys*. A slender anteromedial process of the alisphenoid portion of the auditory bulla is always present, although frequently damaged during specimen preparation. The second upper premolar is always larger than the third. The incisors increase slightly in size from I2 through I5. The lower canines are relatively short compared with those of *Marmosa*, *Micoureus*, and *Thylamys*, but are not as short or premolariform as in *Marmosops*.

Species of *Gracilinanus* are distinguishable from those of *Marmosops* by the shape and arrangement of tail scales and bristles, the non-premolariform lower canine, and

the presence of pectoral mammae. They can be separated from species of *Thylamys* by the absence of seasonal fat deposits in the tail (thus non-incrassate), absence of densely granular central palmar and plantar surfaces, and relatively longer digits and broader interdigital pads on manus and pes. *Gracilinanus* can be distinguished from *Marmosa* and *Micoureus* by the lack of postorbital processes on the frontals and by the annular arrangement of minute scales on the tail.

Included species. —

Gracilinanus aceramarcae (*Marmosa aceramarcae* Tate, 1931:12; type locality “Rio Aceramarca, tributary of Rio Unduavi, Yungas,” La Paz, Bolivia).

Gracilinanus agilis (*Grymaeomys agilis* Burmeister, 1854:139; type locality “Lagoa Santa,” Minas Gerais, Brazil).

Synonyms:

Marmosa beatrix Thomas, 1910:502; type locality “Ipu,” Ceará, Brazil.

Marmosa muscula Shamel, 1930a:83; type locality “Kilometro 182” (=Riachito Pilaga, 10 miles northwest of Km 182), Formosa, Argentina.

Marmosa formosa Shamel, 1930b:311; renaming of *M. muscula* Shamel, 1930a, preoccupied by *Didelphis* (*Marmosa*) *musculus* Cabanis, 1848.

Marmosa agilis chacoensis Tate, 1931:10; type locality “Sapucay,” Paraguay.

Marmosa agilis buenavistae Tate, 1931:10; type locality “Buenavista, Department of Santa Cruz, Bolivia.”

Marmosa agilis peruana Tate, 1931:11; type locality “Tingo Maria, Río Huallaga,” Huánuco, Perú.”

Marmosa unduaviensis Tate, 1931:11; type locality “Pitiguaya, Río Unduavi, Yungas,” La Paz, Bolivia.

Marmosa blaseri Miranda-Ribeiro, 1936:373; type locality “S. Bento,” Goiás, Brazil.

Thylamys rondoni Miranda-Ribeiro,

1936:387; type locality "salto do Sepotuba e S. João da Serra do Norte," Mato Grosso, Brazil.

Gracilinanus dryas (*Marmosa dryas* Thomas, 1898:456; type locality "Culata, Merida, Venezuela").

Gracilinanus emiliae (*Marmosa emiliae* Thomas, 1909:379; type locality "Para, Brazil").

Synonym:

Marmosa agricolai Moojen, 1943:2; type locality "Crato, Ceará," Brazil.

Gracilinanus marica (*Marmosa marica* Thomas, 1898:455; type locality "R. Albarregas, Merida, Venezuela").

Gracilinanus microtarsus (*Didelphys microtarsus* Wagner, 1842:359; type locality "Ypanema," São Paulo, Brazil).

Synonyms:

Marmosa microtarsus guahybae Tate, 1931:10; type locality "Island of Guahyba near Porto Alegre, Rio Grande do Sul," Brazil.

Marmosa herhardti Miranda-Ribeiro, 1936:382; type locality "Humboldt," Santa Catarina, Brazil.

Literature Cited

- Burmeister, H. 1854. Systematische Uebersicht der Thiere Brasiliens, welche während einer Reise durch die Provinzen von Rio de Janeiro und Minas Geraës gesammelt oder beobachtet wurden von Dr. Hermann Burmeister. I. Säugthiere (Mammalia). G. Reimer, Berlin, x + 342 pp.
- Cabanis, J. 1848. Saeugethiere. Pp. 766–786 in R. Schomburgk, ed., Versuch einer Fauna und Flora von Britisch-Guiana, in Reisen in Britisch-Guiana in den Jahren 1840–1844. J. J. Weber, Leipzig, 3:vii + 531–1260.
- Cabrera, A. 1919. Genera Mammalium. Museo Nacional de Ciencias Naturales, Madrid, 177 pp., 17 pls.
- . 1958. Catalogo de los mamiferos de America del Sur.—Revista del Museo Argentino de Ciencias Naturales "Bernardino Rivadavia," Ciencias Zoológicas 4(1):iv + 307 pp.
- Creighton, G. K. 1984. Systematic studies on opossums (*Didelphidae*) and rodents (*Cricetidae*). Unpublished Ph.D. dissertation, University of Michigan, xi + 220 pp.
- Desmarest, A. G. 1827. Sarigue. Pp. 392–399, Vol. 47 in F. G. Cuvier, ed., Dictionnaire des sciences naturelles, dans lequel on traite méthodiquement des différens êtres de la nature considérés soit en eux-mêmes, d'après l'état actuel de nos connoissances, soit relativement à l'utilité qu'en peuvent retirer la médecine, l'agriculture, le commerce et les arts. F. G. Levrault, Strasbourg; Le Normant, Paris, 1816–1845, 61 Vols., 12 Vols. pls.
- Gilmore, R. M. 1941. Zoology. Pp. 314–319 in J. C. Bugher, J. Boshell-Manrique, M. Roca-Garcia, and R. M. Gilmore, eds., The susceptibility to yellow fever of the vertebrates of eastern Colombia.—American Journal of Tropical Medicine 21:309–333.
- Gray, J. E. 1821. *On the natural arrangement of vertebrate animals*.—London Medical Repository 15:297–311.
- . 1843. List of the specimens of Mammalia in the collection of the British Museum. British Museum (Natural History), London, xxviii + 216 pp.
- Kirsch, J. A. W., & J. H. Calaby. 1977. *The species of living marsupials: An annotated list*. Pp. 9–26 in B. Stonehouse and D. Gilmore, eds., The biology of marsupials, University Park Press, Baltimore, viii + 486 pp.
- Lesson, R. P. 1842. Nouveau tableau du Règne Animal. Mammifères. Arthus-Bertrand, Paris, 204 pp.
- Marshall, L. G. 1981. The families and genera of Marsupialia.—Fieldiana: Geology, new series 8: 1–65.
- Matschie, P. 1916. Bemerkungen über die Gattung *Didelphis* L.—Sitzungsberichte der Gesellschaft Naturforschender Freunde, Berlin 1916(1): 259–272.
- Miranda-Ribeiro, A. 1936. *Didelphia* ou *Mammalia*—*ovovivipara*.—Revista do Museu Paulista, São Paulo 20:245–427.
- Moojen, J. 1943. Algunos mamiferos coleccionados do nordeste do Brasil com a descrição de duas especies novas e notas de campo.—Boletim do Museu Nacional, Rio de Janeiro, Zoologia 5:1–14.
- Olfers, I. von. 1818. Bemerkungen zu Illiger's Ueberblik der Säugthiere nach ihrer Vertheilung über die Welttheile, rücksichtlich Südamerikanischen Arten [chapter 10]. Pp. 192–237 in W. L. Eschwege, Journal von Brasilien, oder vermischte Nachrichten aus Brasilien, auf wissenschaftlichen Reisen gesammelt. Vol. 15, heft 2 in F. T. Bertuch, ed., Neue Bibliothek des wichtigsten Reisen-beschreibungen zur Erweiterung der Erd- und Volkerkunde; in Verbin-

- dung mit einigen anderen Gelehrten gesammelt und herausgegeben . . . Gr. H. S. pr. Landesindustries-comptoirs, Weimar.
- Reig, O. A., J. A. W. Kirsch, & L. G. Marshall. 1985. New conclusions on the relationships of the opossum-like marsupials, with [sic] an annotated classification of the Didelphimorphia. — *Ameghiniana* 21(2-4):335-343.
- , ———, & ———. 1987. Systematic relationships of the living and Neocenozoic American "opossum-like" marsupials (suborder Didelphimorphia), with comments on the classification of these and of the Cretaceous and Paleogene New World and European metatherians. Pp. 1-90 in *Possums and opossums: Studies in evolution*. Surrey Beatty & Sons PTY Limited, New South Wales, frontispiece, lxxii + 400 pp., 4 pls.
- Shamel, H. H. 1930a. A new murine opossum from Argentina. — *Journal of the Washington Academy of Sciences* 20:83.
- . 1930b. A new name for *Marmosa muscula* Shamel. — *Journal of Mammalogy* 11:311.
- Tate, G. H. H. 1931. Brief diagnoses of twenty-six apparently new forms of *Marmosa* (Marsupialia) from South America. — *American Museum Novitates* 493:1-14.
- . 1933. A systematic revision of the marsupial genus *Marmosa*. — *Bulletin of the American Museum of Natural History* 66:1-250, 26 pls., 1 table (9 sections, pocketed).
- Thomas, O. 1888. Catalogue of the Marsupialia and Monotremata in the collection of the British Museum (Natural History). British Museum (Natural History), London, xiv + 401 pp., 33 pls.
- . 1898. *On seven new mammals from Ecuador and Venezuela*. — *Annals and Magazine of Natural History*, Series 7 1:451-457.
- . 1909. *New species of Oecomys and Marmosa from Amazonia*. — *Annals and Magazine of Natural History*, Series 8 3:378-380.
- . 1910. *On mammals collected in Ceara, N. E. Brazil by Fraulein Dr. Snethlage*. — *Annals and Magazine of Natural History*, Series 8 6:500-503.
- Wagner, A. 1842. Diagnosen neuer Arten Brasilischer Säugethiere. — *Archiv für Naturgeschichte* 8(1): 359-360.
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